



⑪ Publication number:

**0 504 907 A3**

12

**EUROPEAN PATENT APPLICATION**

② Application number: 92104826.0

Int. Cl.<sup>5</sup>: **H04L 12/42**

② Date of filing: 19.03.92

③ Priority: 22.03.91 JP 59000/91

④3 Date of publication of application:  
**23.09.92 Bulletin 92/39**

⑧ Designated Contracting States:  
CH DE FR IT LI

Ⓢ Date of deferred publication of the search report:  
19.10.94 Bulletin 94/42

71 Applicant: **MITSUBISHI DENKI KABUSHIKI  
KAISHA**  
**2-3, Marunouchi 2-chome**  
**Chiyoda-ku**  
**Tokyo 100 (JP)**

(72) Inventor: Mito, Jun-ichi, c/o Mitsubishi Denki  
K.K.  
Nagoya Works,  
1-14, Yadamlnami 5-chome  
Hiqashi-ku, Nagoya-shi, Aichi (JP)

**(74) Representative: Sajda, Wolf E., Dipl.-Phys. et al**  
**MEISSNER, BOLTE & PARTNER**  
**Widenmayerstrasse 48**  
**D-80538 München (DE)**

⑤4 Communication system.

57) A communication system comprising a master station and a plurality of slave stations connected for serial transmission by a transmission line, using a HDLC-type protocol. Each of the slave stations is equipped with a system counter and a control timing setting register. Each slave station receives data when address information included in a transmission frame sent by the master station matches its own address and presets the system counter so that control timing for the object to be controlled by the master station matches the timing by the one or more slave stations. As a result, plural slave stations can output a control signal which matches the control timing for an object to be controlled by master station when the contents of the system counter match the contents of control timing setting register. The predetermined value may be preset and may be based on a collection of actual control timing data between the master station and each slave station.

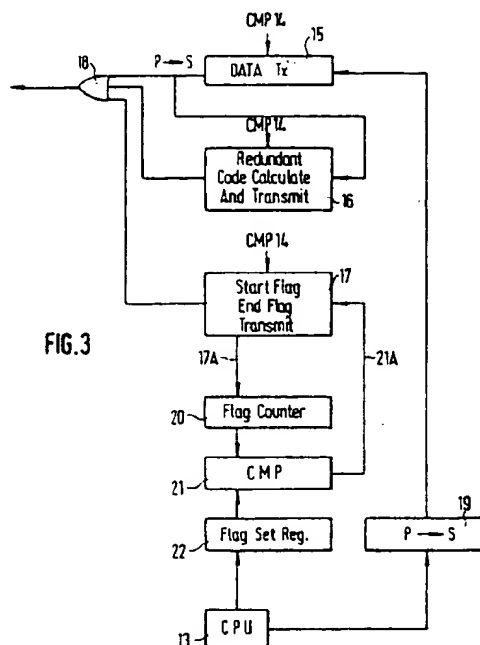


FIG. 3



European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 92 10 4826

| DOCUMENTS CONSIDERED TO BE RELEVANT   |  |  |   |
|---|--|--|---|
| Category  | Citation of document with indication, where appropriate, of relevant passages  | Relevant to claim                                | CLASSIFICATION OF THE APPLICATION (Int. Cl. 5)    |
| X   | PATENT ABSTRACTS OF JAPAN<br>vol. 008, no. 063 (E-233) 24 March 1984<br>& JP-A-58 213 546 (TATEISHI DENKI KK) 12 December 1983<br>* abstract *                                       | 1,2,<br>9-11,14                                  | H04L12/42   |
| Y   | ---  | 5,7,8,<br>18-23                                  |   |
| X<br>A  | EP-A-0 196 094 (HITACHI LTD.)<br><br>* abstract *<br>* claims 1-3 *<br>* figures 1,4-6 *   | 12<br>1,3,13,<br>25                              |   |
| Y   | WO-A-90 09068 (UNIVERSITY OF STRATHCLYDE)<br>* page 10, line 27 - page 11, line 21 *<br>* page 19, line 12 - page 20, line 17 *<br>* claims 15,16 *<br>* figure 15 *<br>* abstract * | 5,18-23  |   |
| Y   | PATENT ABSTRACTS OF JAPAN<br>vol. 014, no. 200 (E-920) 24 April 1990<br>& JP-A-20 043 831 (TOSHIBA CORP.) 14 February 1990<br>* abstract *   | 7  | TECHNICAL FIELDS<br>SEARCHED (Int. Cl. 5)<br>H04L |
| Y   | EP-A-0 068 977 (AUTOMOBILES PEUGEOT ET AL.)<br>* page 3, line 35 - page 4, line 22 *<br>* claim 1 *  | 8  |   |
| A   | US-A-4 727 359 (S. YUCHI ET AL.)<br><br>* abstract *<br>* column 3, line 26 - line 41 *<br>* claim 1 *   | 1,4,6-8,<br>12,25                                |   |
| The present search report has been drawn up for all claims  |  |  |   |
| Place of search<br>THE HAGUE  |  | Date of completion of the search<br>28 June 1994 | Examiner<br>Perez Perez, J                        |
| <b>CATEGORY OF CITED DOCUMENTS</b><br>X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document<br>T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>A : member of the same patent family, corresponding document |  |  |   |



European Patent  
Office

## EUROPEAN SEARCH REPORT

Application Number  
EP 92 10 4826

| DOCUMENTS CONSIDERED TO BE RELEVANT   |   |   |  |
|---|---|---|--|
| Category  | Citation of document with indication, where appropriate, of relevant passages   | Relevant to claim   | CLASSIFICATION OF THE APPLICATION (Int.Cl.5) |
| A   | PATENT ABSTRACTS OF JAPAN<br>vol. 14, no. 515 (E-1000) 13 November 1990<br>& JP-A-22 014 397 (TOSHIBA CORP.) 27<br>August 1990<br>* abstract *<br><br>----- | 25-29   |  |
|   |   |   | TECHNICAL FIELDS<br>SEARCHED (Int.Cl.5)      |
|   |   |   |  |
| The present search report has been drawn up for all claims  |   |   |  |
| Place of search<br>THE HAGUE  |   | Date of completion of the search<br>28 June 1994  | Examiner<br>Perez Perez, J                   |
| CATEGORY OF CITED DOCUMENTS   |   |   |  |
| X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document |   | T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>.....<br>& : member of the same patent family, corresponding document |  |



European Patent  
Office

### CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ All claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid.
- namely claims:
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

### LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions.

namely:

see sheet -B-

- ☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid.
- namely claims:
- ☐ None of the further search fees has been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims.
- namely claims



European Patent  
Office

EP 92 10 4826 -B-

#### LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims 1-11,14-24:

Master slave communications system.  
Synchronisation is achieved by assigning a delay to each slave station. After reception of data from the master station, each slave station delayably controls the response according to the respective delay

2. Claims 12,13:

Method of synchronising the operation of a master slave communications system. A plurality of serially positioned time slots, each of said time slots being allocated to a corresponding slave station for the transmission of data from said master station to said slave station

3. Claims 25-29:

Master slave communications system using HDLC type protocol. After address recognition in the frame received from the master station, data transmission is effected based on the time of day

**THIS PAGE BLANK (USPTO)**

**This Page is Inserted by IFW Indexing and Scanning  
Operations and is not part of the Official Record**

**BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☒ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** \_\_\_\_\_

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.**

**THIS PAGE BLANK (USPTO)**